



IUE 5 : Typical Performance for Tannery Waste Water Treatment

2018 Updated document

Parameters	COD (chemical oxygen demand)		BOD ₅ (biological oxygen demand)		Suspended Solids		Chromium		Sulfide		N (Kjeldahl)		Conductivity	Colour	Sludge Production
	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	%	mg/l	mS	% Pt-Co unit	kg DS/ton rawhide
PRETREATMENT															
Grease removal (dissolved air flotation)	20-40														
Sulfide oxidation (liming and rinsing liquors)	10									10					
Chromium precipitation								2-10							
PRIMARY TREATMENT															
Mixing + Sedimentation	25-35		25-35		50-70			20-30			25-35				80
Mixing + Chemical treatment + Sedimentation	50-65		50-65		80-90			2-5		2-10	40-50				150-200
Mixing + Chemical treatment + Flotation	55-75		55-75		80-95			2-5		2-5	40-50				150-200
BIOLOGICAL TREATMENT															
Primary or chemical + Aerated facultative lagoons	80-90	300-500	85-95	60-100	85-90	80-120		<1		<1	50	80			100-140
Anaerobic treatment (lagoon or UASB) (2)	65-75	500-700	60-70	150-200	50-80	100-200		<2	0		20-30				60-100
Constructed wetlands (after primary treat.)	70-80	300-400	85-95	60-100										85-90	
Primary or chemical + Extended aeration	85-95	200-400	90-97	20-60	90-98	20-50		<1		<1	50	150			70-150 ⁽¹⁾
Primary or chemical + Extended aeration with nitrification. and denitrification	85-95	200-400	90-97	20-60	90-98	20-50		<1		<1	80-90	30-60			130-150 ⁽¹⁾
Membrane biological reactor (MBR)	80-95	120-180	97-100	5 - 20	100	0		<0.5	99	<0.5					⁽³⁾
TERTIARY TREATMENT															
Advanced Oxidation Fenton	55-85	40-100		< 20		< 20									95-100
Nanofiltration (NF)													< 1.0 ⁽⁴⁾	100	
Reverse Osmosis (RO)													< 0.7 ⁽⁴⁾	100	
Evaporator (Condensate)													< 0.2	100	

(1) Without chemical treatment

(2) Mixed with 75 % domestic sewage, UASB = upflow anaerobic sludge blanket

(3) Approximately 7 % of the metabolised COD is incorporated into surplus sludge production, compared to 30 - 50% in a conventional activated sludge system

(4) At 70% permeate recovery rate

The above data represents typical values for tannery waste water treatment efficiency for conventional process liquors for production of finished leather from raw material.

Salinity is not removed through primary and biological treatment. TDS can be increased by chemical treatment.